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# HINTS ON THE CONTROL OF SMALL MAMMAL PESTS IN EASTERN CANADA

BY

AUSTIN W. CAMERON

NATIONAL MUSEUM OF CANADA  
DEPARTMENT OF RESOURCES AND DEVELOPMENT

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# HINTS ON THE CONTROL OF SMALL MAMMAL PESTS IN EASTERN CANADA

## INTRODUCTION

Most wild mammals that frequent gardens and orchards are either beneficial or of little economic importance, but a few species may prove obnoxious at times and require some measure of control. Under such circumstances, the grower or householder is faced with the problem of eradicating or repelling the animals without resorting to a large scale program that would be both costly and time-consuming. The need for a brief outline of standard control methods applicable to conditions in Eastern Canada has prompted the preparation of this booklet. No attempt has been made to discuss all the known techniques exhaustively, and comments on the control of house mice and Norway rats have been reserved for a subsequent publication.

The information contained herein is compiled from various published sources and from data provided by museum collectors, agricultural workers and private individuals. Unfortunately there is no federal or provincial agency engaged in research on the control of small mammal pests in Canada and there can, therefore, be no guarantee that the suggestions made in this paper will prove effective in all cases.

Additional information may be obtained by writing to the Zoology Section, National Museum of Canada, Ottawa, Canada.

## WOODCHUCKS

The woodchuck or groundhog is a relatively large rodent with short legs and a short tail. The usual colouration is a greyish-brown above and pale buff below. There is a great deal of individual variation, some being bright orange-red, others almost jet black.

This animal is a familiar sight on eastern farmlands basking in the sun at an entrance to its burrow. Although there is usually only one to a burrow, several may live together peaceably. Some burrows have two or more entrances, one of which may be concealed in a clump of bushes or in a rock pile. The underground tunnels extend for some distance underground and terminate in a sleeping chamber.



The chief foods of the chuck are various grasses, clover, alfalfa, and numerous other succulent plants. It may become a great nuisance if it takes up residence near a truck garden often destroying sprouting beans and peas and flattening growing corn to get at the new kernels still in the milk. In addition, it sometimes girdles the trunks of young fruit trees. Burrows located in deep hay also can be hazardous to horses at mowing time.

Control is relatively simple if operations are begun in May or June before the growing hay obscures the entrances to the burrows. Also it is well to take action at that time of year, as later the young are likely to be wandering at large and may not have constructed burrows of their own.

When the burrows are located, a wad of cotton, on which has been poured three tablespoonfuls of carbon disulphide, should be dropped into each entrance. Then cover all entrances with an inverted sod so the carbon disulphide gas cannot escape. Care should be taken that soil falling into the burrow does not cover the cotton wad. The gas will kill any animals within the burrow. As the chemical is highly inflammable, one should not smoke while using it.

Calcium cyanide may be used but only thoroughly reliable persons should be entrusted with it, as it produces fumes that are lethal if inhaled. About one rounded teaspoonful should be placed in each burrow and the entrance sealed with an inverted sod.

Shooting chucks can be a fascinating sport and at the same time serve as an effective measure of control. No. 1 1/2 or No. 2 steel traps may also be used with good results.

### SQUIRRELS AND CHIPMUNKS

In certain parts of southern Canada, grey or black squirrels may constitute a nuisance, and red and flying squirrels are sometimes a problem to householders living near evergreen forest.

The grey or black squirrel is almost twice as large as its red cousin and is most frequently found in the parks and along the avenues of our larger cities. In Eastern Canada it occurs in Ontario north to Ottawa, in Quebec north to Montreal and at Fredericton, New Brunswick. The black squirrel is merely a colour phase of the grey and is not a distinct species as commonly supposed.



The red squirrel is too well known to require description here. The flying squirrel may be identified by the wide gliding membrane stretching between the fore and hind legs, its pale fawn colouration and large eyes. Because of its habit of moving about only at night it may be relatively common in an area and yet go unnoticed.

Chipmunks are rarely injurious but at times they do inflict injury to newly-planted seed beds. There is only one species, the eastern chipmunk, in most of Eastern Canada, but in extreme south-western Ontario the least chipmunk is not uncommon.

These four species inhabit wooded or semi-wooded areas where they feed on various fruits, nuts, seeds, and buds, and occasionally the eggs and young of birds. Red and flying squirrels usually nest in hollow trees or old woodpecker holes, but the grey squirrel frequently builds outside nests. Constructed of twigs and leaves, the outside nests are about 18 inches in diameter and resemble the nest of a crow or hawk.

Squirrels and chipmunks may be trapped with ordinary snap-back or guillotine rat traps baited with nut meats or other favoured foods. Peanut butter makes a good bait if the squirrels have first had an opportunity to develop a taste for it. It is well to choose as bait some foodstuff on which the animals are known to feed in the particular locality where control is deemed advisable.

At times squirrels may take up residence in an attic or in a summer home, gaining entrance either through existing openings or by cutting their own. They may inflict damage to fruit trees, shrubs, flower bulbs, and even vegetables.

In many cases it is either illegal or undesirable to destroy squirrels, but there are several inexpensive repellents that may be used to advantage. Two to five pounds of naphthalene flakes, moth balls or paradichlorobenzene crystals sprinkled around the areas frequented by the squirrels is usually sufficient to discourage them. At times they may persist in gnawing their way back into a building from which they have been evicted. In such cases a strong solution of lysol or creolin applied to the wood with a brush will act as a repellent. A solution consisting of two quarts of water, three pounds of asphalt emulsion, and two quarts of copper carbonate may be applied to the bark of trees to prevent squirrel damage. The squirrels find



this mixture distasteful and are unlikely to attack trees to which it has been applied.

Before taking any eradication measures it is well to consult with the local game warden, as grey squirrels are protected in some areas. For trapping use No. O steel traps baited with nut meats or other foods eaten by the squirrels in that locality.

## RABBITS

Two species of rabbit, the cottontail and the snowshoe hare, occur in the agricultural regions of Eastern Canada. The cottontail is the smaller of the two, rarely exceeding three pounds in weight. Unlike its large cousin it is brown at all seasons of the year and unlike it, too, the young are blind and naked at birth. This rabbit is a southern species and is rare north of the international boundary except in Ontario.

The snowshoe hare is the familiar rabbit of southern and central Canada where farm lands are interspersed with woodlots. The hare is larger than the cottontail and turns white in winter. As its name implies, it has very large feet which are heavily furred in winter, giving the impression of snowshoes. The young are well developed at birth and are able to follow the parent almost at once.

Rabbits feed on all sorts of vegetable matter including leaves, stems, and flowers of herbaceous plants. They are especially fond of the tender sprouts of garden plants and they sometimes inflict serious damage to truck gardens and trees.

A non-toxic repellent that may help to prevent injury to tree trunks may be prepared in the following manner:- add about two quarts of water to three pounds of asphalt emulsion and stir into a smooth paste; then add two pounds of copper carbonate and apply with a soft brush. Many other satisfactory repellents are available on the market.

Trees may also be protected by placing cylinders of 1 1/2 inch mesh wire around the trunks. Such jackets should be about three feet high.

Truck gardens may be protected by surrounding them with three foot fences of 1 1/2 inch wire netting or pickets placed not more than two inches apart.



Both traps and snares are sometimes employed, but great care should be exercised as they may prove hazardous to domestic pets. No. 1 and No. 2 steel traps have been used with success, but it is advisable to wrap the jaws carefully with cloth in case a domestic animal should be trapped. In exceptional circumstances alfalfa hay sprayed with a strychnine solution may also be used, but it involves a great deal of risk, and the farmer would be well advised to try all other methods before resorting to such drastic measures.

### MEADOW MICE

There are several species of wild mice that may prove troublesome at times. The more common of these are: the white-footed mouse, the red-backed mouse and the meadow mouse. The white-footed mouse may be distinguished by its long tail and pure white underparts. It is most likely to be encountered in or near wooded areas and is usually more of a petty annoyance than a genuine pest. The red-backed mouse is a bright, rusty red above and has a short tail. It is also a woodland species and rarely presents a serious problem. The meadow mouse is a robust species with long, loose, brownish fur and short tail. There have been serious outbreaks of this mouse in certain areas, and it has been known to inflict considerable damage to fruit trees and growing crops.

The meadow mouse favours a wide variety of habitats: dry pastures, hay fields, low meadows and open glades in the woods. When abundant, its numerous trails may be seen meandering among the tussocks of grass. The trails are about an inch wide and here and there tiny heaps of green droppings may be noticed on trails that are in use.

Meadow mice breed very rapidly: one female is known to have produced no less than seventeen litters in a single year! Fortunately, their numbers are periodically reduced by disease or other factors. Every four years these rodents reach a peak of abundance, and then, for reasons not yet clearly understood, a general die-off occurs. It is probable, therefore, that, in a given area, crop injury is likely to be most apparent during one season in every four years. There are also numerous natural enemies, such as hawks, owls, foxes, weasels, etc., to keep their numbers within bounds.

In many sections of Canada, meadow mice infest granaries where they often destroy large quantities of stored grains. They



may also gnaw harness and other leather goods. Young fruit trees are often killed by the mice, especially in late winter when they girdle the trunks below the snow level where the injury cannot be detected until spring. When abundant, they destroy growing crops and riddle hay fields with their many burrows.

The pests may be controlled in buildings by trapping in much the same manner as that employed for house mice. Fortunately they are much more easily trapped. Leather goods may be protected by painting them with a pine tar solution.

To prevent injury to fruit trees over two years old, apply a wash consisting of one part creosote and two parts coal tar. This preparation may prove harmful to trees less than two years old, in which case it is preferable to place jackets of 1/2 inch mesh wire around the trunks. Since mice are attracted by brush piles, weed patches, etc., it is well to remove all such debris from the orchard area.

To control light infestations of mice in gardens one may set ordinary snap-back mouse traps in their runways. Bait, such as oatmeal or peanut butter, may be used, but is usually unnecessary. For heavier infestations involving a wide area it may be more practicable to spread poisoned bait where it will be easily accessible to the mice. The following formula is recommended: heat 32 fluid ounces of mineral oil and stir into it 10 ounces of powdered zinc phosphide, then slowly pour the solution over hulled oats, barley, or a similar food grain. Another method is to dissolve five ounces of powdered strychnine alkaloid in two quarts of water and sprinkle the solution over green alfalfa. Great care should be exercised when using these poisons and all containers used in mixing should be either rigorously cleaned or discarded. The poison or the containers should never be left where children or pets might have access to them.

## MOLES

Moles are relatively small mammals closely related to shrews from which they may be distinguished by their larger size and large front feet. They are insect-eaters and spend most of their lives underground. Here they construct elaborate tunnels both as a means of communication and to seek out the insects on which they feed.

Frequently moles injure the roots of crop and garden plants while searching for insects, and they can cause considerable



damage to lawns, gardens, and golf greens by throwing up the turf. Actually, they are beneficial as insect destroyers, and once the insect population has been reduced the moles usually leave of their own accord.

Because of their tunneling habits, moles cannot be effectively destroyed by any of the methods used for other small mammals. Snap-back traps set into their tunnels are likely to be covered with soil and poisoned baits rarely prove effective. Fortunately there are available on the market several specially designed mole traps that either spear the animal with guillotine-like prongs or cut it in two. The trigger, in both cases, projects into the tunnel and when the mole attempts to push past the obstruction, the trigger mechanism is released.

Traps should be set in tunnels that are in current use. Many of the obvious surface tunnels are excavated by the mole while it is searching for grubs and are never used again. Others are in regular use and it is in these that traps should be set. In order to determine whether a tunnel is permanent or temporary, flatten out the surface ridges here and there and observe if they are repaired. If so, the tunnel is probably in regular use. To locate deeper tunnels that are more likely to be permanent, push a sharp stick or crowbar into the earth until the underground passage is located. In cases where only one or two animals are involved a portion of the tunnel may be opened up and an ordinary snap-back trap, baited with oatmeal or peanut butter, can be set and the opening closed with a sod or shingle.

## BATS

Bats are beneficial animals and should not be destroyed. They can be a nuisance, however, if they take up residence in an attic or between the walls of a house. Their constant flutterings when the human occupants are trying to sleep and the disagreeable odour of their droppings makes them objectionable tenants. To evict them, place about 5 pounds of naphthalene flakes, moth balls or paradichlorobenzene crystals in the infested areas, and when the bats have departed, close all openings. Bats can squeeze through surprisingly small cracks so all openings, no matter how small, should be sealed.

At the onset of cold weather they sometimes enter dwellings to hibernate. They can usually be seen hanging motionless from



a beam or against a wall. They are unlikely to prove objectionable at this time of year, but if one wishes to evict them, it is a simple matter to catch them in the hand and destroy them. Leather gloves should be worn when handling bats as they have very sharp teeth and a bite can be very painful.

## SKUNKS

The striped skunk ranges from Nova Scotia to British Columbia and from the International Boundary as far north as Fort Simpson in the Northwest Territories.

Skunks are generally beneficial to man, consuming large quantities of injurious insects, particularly the larvae of certain beetles. Small rodents, various fruits, berries, mushrooms and unripened corn are also taken. Occasionally they destroy the eggs and young of ground-nesting birds.

Skunks usually occupy dens, especially in winter, where they hibernate during the colder months. They may dig the dens themselves, or appropriate the vacated burrows of woodchucks. In summer they often take residence under buildings.

Skunks are most objectionable when a family of them becomes established under a building, their disagreeable odour frequently making it unpleasant for the human occupants.

More serious, perhaps, are their depredations in poultry houses. Evidently, certain individuals acquire a taste for fowl and it is then that action must be taken. On the other hand, skunks are often accused of crimes committed by less conspicuous predators such as weasels and rats. They may also raid bee hives to feed on the larval bees. Occasionally, they become troublesome in settled areas by tearing up lawns in search of grubs.

If skunks take up residence under a dwelling house or outbuilding, they may be evicted by placing several pounds of naphthalene flakes in the area. These flakes may also be dropped into the burrow. Household ammonia has also been used with good results, although the effects are not long-lasting. As soon as the skunks depart all openings should be closed. To exclude them from poultry houses, a fence of strong wire, three feet high, should be erected around the building. It should be driven at least six inches into the ground, as otherwise the skunks will dig under it.



For trapping, No. 1 or 1 1/2 steel traps should be set near the den entrances. Better results can be obtained by baiting the trap with meat or a dead mouse. When taken in ordinary traps, skunks often discharge their scent. In situations where this would be objectionable, box traps can be used to advantage. Skunks usually will not eject the scent when confined to close quarters. They may then be drowned or liberated in an area where they are unlikely to prove objectionable.

Although skunks are not often seen because they move about mostly at night, they can be destroyed by shooting. They almost invariably discharge scent when shot, except in cases where the spinal cord is severed by the bullet. Severing the spinal cord paralyzes the hind quarters and the skunk is unable to discharge scent.

Before any action is taken to destroy animal pests, it is always well to consult with local police officers or game wardens regarding provincial or municipal laws pertaining to trapping, shooting and poisoning.

## PORCUPINES

Porcupines are found in the evergreen forests of Eastern Canada. They feed mainly on the bark of balsam fir, spruce and tamarack, but they do consume a good deal of herbaceous plant material in summer. They live in hollow trees or in rock caves.

They have an intense craving for salt and will gnaw anything that contains even a faint trace of this substance. For this reason they frequently chew the handles of tools, harness, etc. that contain salt derived from perspiration.

As a preventative measure, such objects should be placed out of reach of these rodents and should always be stored in a safe place when the owner is absent for long periods.

Porcupines can best be controlled by shooting or clubbing. No. 2 steel traps can also be used.

Since the flesh of this rodent is tender and palatable, animals that are killed may be used for human consumption. Porcupines are a boon to a person lost in the woods and some woodsmen feel that they should not be destroyed except under such circumstances.



## REPTILIAN PESTS

Although the control of reptilian pests lies beyond the scope of the present paper, a section on snakes is included because many requests for information on this subject are received by the Zoology Section of the National Museum of Canada.

### SNAKES

Most of the snakes found in Eastern Canada are beneficial and should not be destroyed. They feed on many species of injurious insects and help to keep down the population of small rodents. In a number of cases brought to the attention of the writer, gardeners have destroyed the snakes on their premises only to find that meadow mice, which the snakes were keeping in check, became very abundant.

In those exceptional cases where it might be found desirable to destroy the snakes, the most practicable method is to club them to death or shoot them. This can be done most effectively in early spring when they have emerged from hibernation and are still concentrated in small "colonies". If an underground burrow occupied by snakes is located, a heaping tablespoonful of calcium cyanide can be dropped into the entrance and then covered with an inverted sod. Water snakes can be captured by placing a wire loop on the end of a stick and dropping the noose over the snake's head.

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